

IN THE CLAIMS:

Please cancel Claims 58-86 and add new Claims 87-~~121~~ under the provisions of 37 CFR §

1.121(a).

87. A biological material comprising:

- a) at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs, and
- b) a biocompatible three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:
 - A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series,
 - B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the ~~alcoholic~~ groups of the same or a different hyaluronic acid chain,
 - C) a crosslinked ester of hyaluronic acid wherein part or all of the carboxylic groups are esterified with polyalcohols of the aliphatic aromatic, arylaliphatic, cycloaliphatic, heterocyclic series generating crosslinking by means of spacer chains;
 - D) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series,
 - E) An O- or N-sulfated hyaluronic acid or a derivative thereof.

88. The biological material according to claim 87 wherein said autologous or homologous cellular line is cultivated in presence of a medium treated with autologous or homologous fibroblasts or in a co-culture with fibroblasts.

89. The biological material according to claim 87, further containing keratinocytes, collagen and/or fibrin.

90. The biological material according to claim 87, wherein said endothelial cells are isolated from an umbilical vein from dermis or other tissue wherein blood vessels are present.

91. The biological material according to claim 87 wherein the glandular cells are liver or Langerhans' islet cells.
92. The biological material wherein the skin adnexa are sebaceous glands, sweat glands or hair bulbs and the germinative cells are isolated from autologous or homologous hair bulbs.
93. The biological material according to claim 87, wherein the hyaluronic acid ester is a benzyl ester with a degree of esterification between 25 and 100%.
94. The biological material according to claim 87, wherein the biocompatible three-dimensional matrix is in the form of a non-woven fabric, sponges, granules, gauzes, microspheres guide-channels or combination with one another.
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95. The biological material according to claim 94 wherein the biocompatible three-dimensional matrix is in the form of a non-woven fabric.
96. A process for preparing a biological material according to claim 88 comprising the following steps:
i) isolating at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,
ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
iii) seeding said cellular line on said matrix optionally in the presence of autologous human fibroblasts or in a co-culture with autologous or homologous human fibroblasts.
97. The process according to claim 96 wherein, when the cellular line is selected from the group consisting of autologous or homologous skin adnexa and germinative cells of hair bulbs, said cell lines are optionally seeded in with autologous or homologous keratinocytes.

98. A process for the preparation of the biological material according to claim 88 comprising the following steps:

- i) isolating endothelial cells from human umbilical vein by enzymatic digestion with collagenase;
- ii) amplifying said cells on collagen treated dishes,
- iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
- iv) seeding said endothelial cells optionally in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and germinative cells of hair bulb and optionally in the presence of a medium treated with human autologous or homologous fibroblasts in primary culture or in a co-culture with human autologous or homologous fibroblasts.

99. A method of carrying out human and veterinary surgery which comprises employing in said surgery the biological material as defined in claim 87.

100. The biological material according to claim 87 wherein the cellular line comprises skin adnexa optionally in association with keratinocytes for use in skin transplants.

101. The biological material according to claim 100 wherein the cellular line further comprises autologous or homologous endothelial cells thereby facilitating the mechanism of neovascularization of the transplanted skin.

102. The biological material according to claim 87 wherein the cellular line comprises germinative cells of hair bulbs for use in scalp transplants.

103. The biological material according to claim 87, wherein the cellular line comprises islets of Langerhans for use in case of insufficient insulin production.

104. The biological material according to claim 87, wherein the cellular line comprises endothelial cells for use in surgery.

105. The biological material according to claim 104, for use in surgeries of the type consisting of: cardiovascular, aesthetic and oncological.

106. A method of enhancing tissue vascularization during surgery which comprises the steps of
The biological material according to claim 104 for use in surgery to enhance the biological process of tissue vascularization

107. A biological material according to claim 87, wherein the cellular line is an autologous cellular line as support for gene transfection.

108. The biological material according to claim 87, wherein the cellular line is an autologous cellular line for use in gene transfection.

E' 109. An *in vitro* biological material comprising: a) at least one cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,

- b) a biocompatible three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:
 - A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series,
 - B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain,
 - C) a crosslinked ester of hyaluronic acid wherein part or all of the carboxylic groups are esterified with polyalcohols of the aliphatic aromatic, arylaliphatic, cycloaliphatic, heterocyclic series generating crosslinking by means of spacer chains;
 - D) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series,
 - E) An O- or N-sulfated hyaluronic acid or a derivative thereof.

110. The biological material according to claim 109, wherein said cellular line is cultivated in the presence of a medium treated with fibroblasts or in a co-culture with fibroblasts.

111. The biological material according to claim 109, further comprising keratinocytes, collagen and/or fibrin.

112. The biological material according to claim 109, wherein said endothelial cells are isolated from the umbilical vein from dermis or other tissue wherein blood vessels are present.

113. The biological material according to claim 109, wherein the glandular cells are liver or Langerhans' islet cells.

114. The biological material according to claim 109, wherein the skin adnexa are sebaceous glands, sweat glands or hair bulbs and germinative cells are isolated from autologous, homologous, heterologous hair bulbs.
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115. The biological material according to claim 109, wherein the hyaluronic acid ester is a benzyl ester having a degree of esterification of between 25 and 100%.

116. The biological material according to claim 109, wherein the biocompatible three-dimensional matrix is in the form of a non woven fabric, sponges, granules, gauzes, microspheres, guide channels or combination with one another.

117. The biological material according to claim 109, wherein the biocompatible three-dimensional matrix is in the form of a non woven fabric.

118. A process for preparing the biological material according to claim 109 comprising the following steps:

- i) isolating at least one cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,
- ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,

iii) seeding said cellular line on said matrix optionally in the presence of human fibroblasts or in a co-culture with human fibroblasts.

119. The process according to claim 118 wherein when in step (i) the cellular line is selected from the group consisting of skin adnexa and germinative cells of hair bulbs these are optionally seeded in association with keratinocytes.

120. A process for preparing the biological material according to claim 110 comprising:

- i) isolating endothelial cells from human umbilical vein by enzymatic digestion with collagenase;
- ii) amplifying said cells on collagen treated dishes;
- iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
- iv) seeding said endothelial cells optionally in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and germinative cells of hair bulb and optionally in the presence of a medium treated with human fibroblasts in primary culture or in a co-culture with human fibroblasts.

121. The biological material according to claim 109 for the screening of medicaments or toxic substances.
